

--Abstract of the disclosure

The state OF electronic energy and generation of radical species is controlled by controlling the electron energy state using electromagnetic waves radiated into plasma and a magnetic field, and by controlling each state of capacitatively coupled discharge, inductively coupled discharge and electronic cyclotron resonant discharge. Further, the radiated electromagnetic wave power distribution is controlled through displacement current control, and the uniformity in plasma processing is controlled through plasma distribution control. Still further, the density distribution of radio frequency current flowing through the substrate is controlled, thereby preventing changes in the characteristics of the semiconductor devices.--